

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Seiki TAMURA Attorney Docket No.: 071051.00011
Serial No.: 10/540,816 Confirmation No.: 6348
Filed: June 24, 2005 Group Art Unit: 1619
Examiner: MATTISON, Lori K.
Title: HAIR CARE COMPOSITION

BRIEF ON APPEAL

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

Subsequent to the filing of the Notice of Appeal with United States Patent and Trademark Office (USPTO) on October 21, 2009, the Applicants now submit a Brief on Appeal (Appeal Brief) in response to the rejections set forth in the Office Action dated July 17, 2009 and the Advisory Action dated October 6, 2009, and in furtherance of the Response After Final filed on September 17, 2009. This Appeal Brief is being submitted in accordance with 37 CFR §41.37 and is accompanied by the required fee of \$540.00 under §41.20(b).

The USPTO is authorized to charge or refund any fee deficiency or excess to Deposit Account No. 08-2789.

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I. Real Party in Interest

The real party in interest is Dow Corning Toray Company, Ltd., to which an Assignment has been recorded at Reel 017193, Frame 0155 in the United States Patent and Trademark Office.

II. Related Appeals and Interferences

There are no known prior or pending appeals, interferences, or judicial proceedings which are related to, directly affect or are directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims

Claims 1 and 4-14 are pending in the application with claim 1 in independent form. Claims 2 and 3 were previously cancelled. Claims 4-14 stand withdrawn.

Claim 1 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 6,287,891 to Rautscheck (the '891 patent). The rejection of claim 1 over U.S. the '891 patent is being appealed.

IV. Status of Amendments

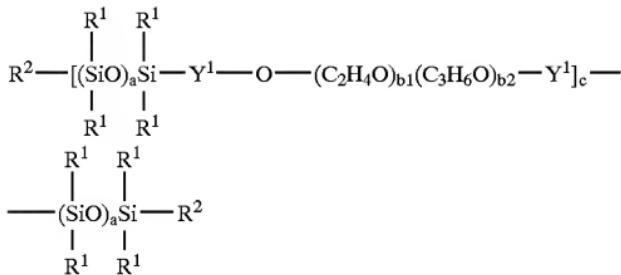
No amendments have been filed subsequent to the Amendment filed on April 21, 2009. All amendments have been entered and are reflected in the claims in the Claims Appendix.

V. Summary of Claimed Subject Matter

A. Independent claim 1

Independent claim 1 is directed toward a composition for hair. The composition comprises a block copolymer (A) represented by the following general formula (1):

General formula (1)

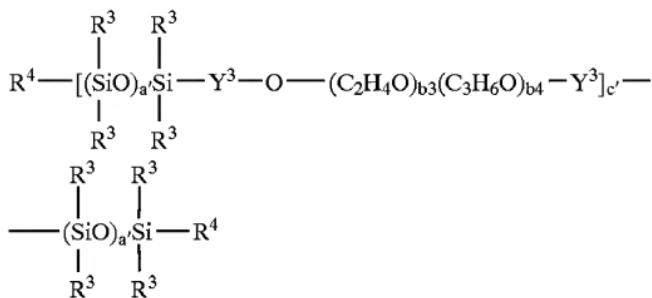


wherein R^1 independently designates univalent hydrocarbon groups free of aliphatic unsaturation, hydroxyl groups, or alkoxy groups; Y^1 designates a bivalent organic group; R^2 independently designates hydrogen atoms, hydroxyl groups, substituted or unsubstituted univalent hydrocarbon groups, alkoxy groups, or groups represented by the following formula: $- \text{Y}^1 - \text{O} - (\text{C}_2\text{H}_4\text{O})_{b1}(\text{C}_3\text{H}_6\text{O})_{b2} - \text{Y}^2$ (wherein Y^2 is a hydrogen atom or a substituted or unsubstituted univalent hydrocarbon group); "a" is 1 or a greater integer; "b1" is 1 or a greater integer; "b2" is 0, 1 or a greater integer; "c" is 1 or a greater integer. The average molecular weight of the polyorganosiloxane block represented by formula: $- (\text{SiR}^1_2\text{O})_a \text{SiR}^1_2 -$ is equal to or exceeds 10,500 and constitutes 50 to 99 mass percent of block copolymer (A). The average molecular weight of the polyoxyalkylene block represented by formula: $- (\text{C}_2\text{H}_4\text{O})_{b1}(\text{C}_3\text{H}_6\text{O})_{b2} -$ is within the range of 130 to

10,000. In addition, the average molecular weight of block copolymer (A) is equal to or higher than 50,000.

The composition further comprises a block copolymer (B) represented by the following general formula (2):

General formula (2)



wherein R^3 independently designates substituted or unsubstituted univalent hydrocarbon groups or groups of the following formula: $- Y^3 - O - (C_2H_4O)_{b3}(C_3H_6O)_{b4} - Y^4$ (wherein Y^3 , $b3$, and $b4$ are defined below, Y^4 designates hydrogen atoms or a substituted or unsubstituted univalent hydrocarbon group); Y^3 designates a bivalent organic group; R^4 independently designates hydrogen atoms, hydroxyl groups, substituted or unsubstituted univalent hydrocarbon groups, alkoxy groups, or groups represented by the following formula: $- Y^3 - O - (C_2H_4O)_{b3}(C_3H_6O)_{b4} - Y^4$; wherein "a'" is an integer within the range of 1 to 1350; "b3" and "b4" are, respectively, integers within the range of 0 to 220 (but $b3$ and $b4$ cannot be both 0); "c'" is an integer within the range of 0 to 50; when c' is 0, at least one of the groups designated by R^3 or R^4 is represented by the

formula: - $Y^3 - O - (C_2H_4O)_{b3} (C_3H_6O)_{b4} - Y^4$. The average molecular weight of the polyorganosiloxane block represented by formula: - $(SiR^3_2O)_a SiR^3_2$ - is within the range of 134 to 10,000 and constitutes 0.7 to 97.5 mass % of block copolymer (B). The average molecular weight of the polyoxyalkylene block represented by formula: - $(C_2H_4O)_{b3} (C_3H_6O)_{b4}$ - is within the range of 130 to 10,000 and the average molecular weight of block copolymer (B) is within the range of 650 to 100,000.

Each of block copolymer (A) and block copolymer (B) is present in the composition within the range of 0.01 to 10 mass % (per total weight of the composition as a reference).

Each element of independent claim 1 and support for each element in the specification is provided below in Table 1.

TABLE 1

Claim 1 elements	Support for the element in the specification
A composition for hair comprising:	Support for this claim element can be found in at least the Abstract, and paragraphs [0014]-[0017] of the subject application as published.
a block copolymer (A) represented by the following general formula (1): General formula (1)	Support for this claim element can be found in at least paragraphs [0018] and [0036] of the subject application as published.
$ \begin{array}{c} R^1 \quad R^1 \\ \quad \\ R^2 - [(SiO)_2Si] - Y^1 - O - (C_2H_4O)_{b3} (C_3H_6O)_{b4} - Y^1]_c \\ \quad \\ R^1 \quad R^1 \\ \quad \\ -(SiO)_2Si - R^2 \\ \quad \\ R^1 \quad R^1 \end{array} $ wherein R^1 independently designates univalent hydrocarbon groups free of aliphatic unsaturation, hydroxyl groups, or alkoxy groups;	Support for this claim element can be found in at least paragraphs [0018] and [0037] of the subject application as published.

Y ¹ designates a bivalent organic group;	Support for this claim element can be found in at least paragraphs [0018] and [0040]-[0042] of the subject application as published.
R ² independently designates hydrogen atoms, hydroxyl groups, substituted or unsubstituted univalent hydrocarbon groups, alkoxy groups, or groups represented by the following formula: - Y ¹ - O - (C ₂ H ₄ O) _{b1} (C ₃ H ₆ O) _{b2} - Y ²	Support for this claim element can be found in at least paragraphs [0018] and [0043] of the subject application as published.
(wherein Y ² is a hydrogen atom or a substituted or unsubstituted univalent hydrocarbon group);	Support for this claim element can be found in at least paragraphs [0018], [0043] and [0045] of the subject application as published.
"a" is 1 or a greater integer;	Support for this claim element can be found in at least paragraphs [0018] and [0047] of the subject application as published.
"b1" is 1 or a greater integer;	Support for this claim element can be found in at least paragraphs [0018] and [0048] of the subject application as published.
"b2" is 0, 1 or a greater integer;	Support for this claim element can be found in at least paragraphs [0018] and [0049] of the subject application as published.
"c" is 1 or a greater integer;	Support for this claim element can be found in at least paragraphs [0018] and [0050] of the subject application as published.
the average molecular weight of the polyorganosiloxane block represented by formula: - (SiR' ₂ O) _a SiR' ₁ - is equal to or exceeds 10,500; the polyorganosiloxane block constitutes 50 to 99 mass % of block copolymer (A);	Support for this claim element can be found in at least paragraphs [0018] and [0051] of the subject application as published. Support for this claim element can be found in at least paragraphs [0018] and [0053] of the subject application as published.
the average molecular weight of the polyoxyalkylene block represented by formula: - (C ₂ H ₄ O) _{b1} (C ₃ H ₆ O) _{b2} - is within the range of 130 to 10,000; and	Support for this claim element can be found in at least paragraphs [0018] and [0056] of the subject application as published.

the average molecular weight of block copolymer (A) is equal to or higher than 50,000; and	Support for this claim element can be found in at least paragraphs [0018] and [0061] of the subject application as published.
a block copolymer (B) represented by the following general formula (2): General formula (2)	Support for this claim element can be found in at least paragraphs [0021] and [0065] of the subject application as published.
$ \begin{array}{c} R^3 \quad R^3 \\ \quad \\ R^4 - [(Si(O)_{a3}Si) - Y^3 - O - (C_2H_4O)_{b3}(C_3H_6O)_{b4} - Y^4]_c - \\ \quad \\ R^3 \quad R^3 \\ \quad \\ (SiO)_{a3}Si - R^4 \\ \quad \\ R^3 \quad R^3 \end{array} $	
wherein R^3 independently designates substituted or unsubstituted univalent hydrocarbon groups or groups of the following formula: $-Y^3 - O - (C_2H_4O)_{b3}(C_3H_6O)_{b4} - Y^4$	Support for this claim element can be found in at least paragraphs [0021] and [0067] of the subject application as published.
(wherein Y^3 , $b3$, and $b4$ are defined below, Y^4 designates hydrogen atoms or a substituted or unsubstituted univalent hydrocarbon group);	Support for this claim element can be found in at least paragraphs [0021] and [0067] of the subject application as published.
Y^3 designates a bivalent organic group;	Support for this claim element can be found in at least paragraphs [0021] and [0067] of the subject application as published.
R^4 independently designates hydrogen atoms, hydroxyl groups, substituted or unsubstituted univalent hydrocarbon groups, alkoxy groups, or groups represented by the following formula: $-Y^3 - O - (C_2H_4O)_{b3}(C_3H_6O)_{b4} - Y^4$	Support for this claim element can be found in at least paragraphs [0021] and [0067] of the subject application as published.
$"a"$ is an integer within the range of 1 to 1350;	Support for this claim element can be found in at least paragraphs [0021] and [0071] of the subject application as published.
$"b3"$ and $"b4"$ are, respectively, integers within the range of 0 to 220 (but $b3$ and $b4$ cannot be both 0);	Support for this claim element can be found in at least paragraphs [0021] and [0072]-[0074] of the subject application as published.
$"c"$ is an integer within the range of 0 to 50;	Support for this claim element can be found in at least paragraphs [0021] and [0075] of the subject application as published.

when c' is 0, at least one of the groups designated by R ³ or R ⁴ is represented by the formula: - Y ³ - O - (C ₂ H ₄ O) _{b3} (C ₃ H ₆ O) _{b4} - Y ⁴ ;	Support for this claim element can be found in at least paragraphs [0021] and [0068] of the subject application as published.
the average molecular weight of the polyorganosiloxane block represented by formula: - (SiR ³ ₂ O) _a . SiR ³ ₂ - is within the range of 134 to 10,000;	Support for this claim element can be found in at least paragraphs [0021] and [0076] of the subject application as published.
the polyorganosiloxane block constitutes 0.7 to 97.5 mass % of block copolymer (B);	Support for this claim element can be found in at least paragraphs [0021] and [0077] of the subject application as published.
the average molecular weight of the polyoxyalkylene block represented by formula: - (C ₂ H ₄ O) _{b3} (C ₃ H ₆ O) _{b4} - is within the range of 130 to 10,000; and	Support for this claim element can be found in at least paragraphs [0021] and [0078] of the subject application as published.
the average molecular weight of block copolymer (B) is within the range of 650 to 100,000;	Support for this claim element can be found in at least paragraphs [0021] and [0079] of the subject application as published.
wherein each of block copolymer (A) and block copolymer (B) is present in the composition within the range of 0.01 to 10 mass % (per total weight of the composition as a reference).	Support for this claim element can be found in at least paragraphs [0022] and [0080] of the subject application as published.

VI. Grounds of Rejection to be Reviewed on Appeal

Claim 1 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 6,287,891 to Rautschek (the '891 patent).

The rejection of claim 1 over U.S. Pat. No. 6,287,891 to Rautschek (the '891 patent) is being appealed. Additionally, assuming the subject Appeal results in allowance, the Applicants respectfully request rejoinder of withdrawn claims 4-14.

VII. Argument

Claim 1 has been finally rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. No. 6,287,891 to Rautschek (the '891 patent). Claims 2 and 3 were previously cancelled. Claims 4-14 stand withdrawn.

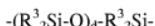
Specifically, the Examiner contends that the '891 patent discloses a generic formula IV which teaches block copolymer A as claimed in the present application. Generic formula IV of the '891 patent is the following:



in which n is greater than or equal to 1, preferably 1-20, and A has the general formula:



where R^1 independently of one another is either hydrogen, alkyl, aralkyl, aryl, or an R^2 - $C(O)-$ radical, and R^2 is a substituted or unsubstituted alkyl radical having from 1 to 8 carbon atoms, m is an integer between 3 and 8, and a, b, and c independently of one another are integers between 0 and 200, with the proviso that the sum (a+b+c) is from 2 to 300. In addition, B has the general formula:

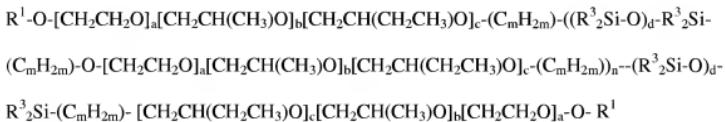


where R^3 independently of one another are substituted and/or unsubstituted, saturated and/or unsaturated hydrocarbon radicals having from 1 to 20 carbon atoms, and d is an integer between 1 and 400. Further, C has the general formula:

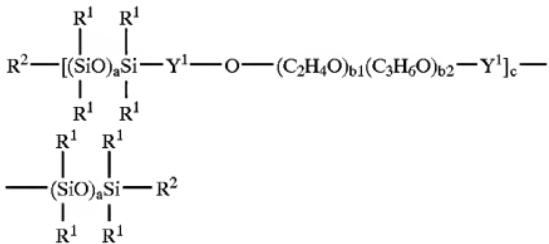


with each subscript being defined above.

Thus, the Examiner contends that the '891 patent discloses the following chemical formula when each respective subunit of general formula IV is replaced for "A," "B," and "C":



In contrast, the present application claims a block copolymer (A) represented by the following general formula:



wherein R^1 independently designates univalent hydrocarbon groups free of aliphatic unsaturation, hydroxyl groups, or alkoxy groups; Y^1 designates a bivalent organic group; R^2 independently designates hydrogen atoms, hydroxyl groups, substituted or unsubstituted univalent hydrocarbon groups, alkoxy groups, or groups represented by the following formula:



wherein Y^2 is a hydrogen atom or a substituted or unsubstituted univalent hydrocarbon group; "a" is 1 or a greater integer; "b1" is 1 or a greater integer; "b2" is 0, 1 or a greater integer; and "c" is 1 or a greater integer.

To arrive at the claimed block copolymer (A) of the subject application, the Examiner has set forth a complex selection of optional moieties and particular substituents and subscripts from the potentially infinite number of possibilities disclosed in the general formula of the '891 patent along with merely conclusory statements relative to the asserted obviousness of the claimed block copolymer (A). The Examiner has even had to "rearrange" the order of atoms present in at least one substituents selected from the numerous substituents disclosed in the '891 patent to arrive at the Applicants' elected species R², as described in greater detail below. The Examiner continues to disagree with the Applicants' assertion that the Examiner has set forth a complex selection of optional moieties and particular substituents and subscripts, despite the fact it took the Examiner nearly five pages to pick and choose from the potentially infinite number of possibilities disclosed by the general formula of the '891 patent to arrive at presently claimed copolymer (A) (see pages 3-7 of the Final Office Action), as described in greater detail below.

The Applicants appreciate the arguments immediately below relate to anticipation of a species in view of a disclosed genus; however, these arguments are applicable in the context of an obviousness rejection of a claimed species in view of a disclosed genus as well, as set forth in greater detail below.

As the Examiner is aware, a genus does not always anticipate a claim to a species within the genus. MPEP § 2131.02. In particular, "[w]hen the compound is not specifically named, but instead it is necessary to select portions of teaching within a reference and combine them, e.g. select various substituents from a list of alternatives given for a placement at specific sites on a generic chemical formula to arrive at a

specific composition, anticipation can only be found if the classes of substituents are sufficiently limited or well delineated.” (emphasis added) *Id.* (citing *Ex parte A*, 17 USPQ2d 1716 (Bd. Pat. App. & Inter. 1990). This is particularly applicable to the instant situation, because the claimed block copolymer (A) of the subject invention is neither specifically named nor disclosed in the ‘891 patent. Moreover, for a person having ordinary skill in the art to arrive at the claimed block copolymer (A) of the subject invention, the person would have to select very specific substituents from the list of alternatives, select particular subscripts to determine the length of certain polymeric chains and overall molecular weight of the copolymer, and the person would even have to exclude particular moieties, such as [CH₂CH(CH₂CH₃)O]_c. In addition, the substituents disclosed in the ‘891 patent are not sufficiently limited or well delineated, as evidenced by the excessive picking and choosing of substituents, moieties, and subscripts required to arrive at the claimed copolymer (A), and further evidenced by the breadth of the classes of substituents encompassed by, for example, the language “substituted and/or unsubstituted, saturated and/or unsaturated hydrocarbon radicals,” which is used throughout the ‘891 patent.

It is unlikely that one of skill in the art would arrive at the claimed copolymer (A) in view of the disclosure of the ‘891 patent. In particular, it is unlikely that one of skill in the art would arrive at the claimed copolymer (A) after analyzing the teachings of the ‘891 patent because the genus disclosed by the ‘891 patent encompasses thousands of alternative block copolymers due to embodiments which include or exclude the moieties [CH₂CH₂O]_a, [CH₂CH(CH₃)O]_b, and [CH₂CH(CH₂CH₃)O]_c as well as embodiments

which vary each substituent, such as R¹, R² and R³, and embodiments which vary the subscripts a, b, c, d and m.

Moreover, in the Final Office Action, the Examiner improperly correlated elected species R² in the subject application to subunit A of the general formula disclosed by the '891 patent. In particular, the Examiner contends that, when the "b" and "c" integers of the A subunit are 0, subunit A of the '891 patent corresponds to the elected species R² in claim 1 of the subject application. (see page 9 of the Final Office Action). This is not the case.

Elected species R² in the subject application is represented by the formula -Y¹-O-(C₂H₄O)_{b1}(C₃H₆O)_{b2}-Y² where b₂ was previously elected as 0, i.e., as absent, Y¹ designates a bivalent organic group, and Y² is a hydrogen atom or a substituted or unsubstituted univalent hydrocarbon group. Conversely, when the "b" and "c" integers of subunit A of the '891 patent are 0, subunit A is represented by the formula: R¹-O-[CH₂CH₂O]_a-(C_mH_{2m}). In this instance, the moiety -(C_mH_{2m})- is bivalent and bonded to subunit (BC) in the general formula. The Applicants respectfully note that subunit A of the '891 patent is written in the opposite order as the elected species R² of the subject application, in which the first moiety, i.e., Y¹, is bivalent. Thus, the Examiner has misinterpreted the order of moieties present in subunit A of the '891 patent relative to elected species R² of the subject application. Specifically, if subunit A of the '891 patent and the elected species R² of the subject application were written in the same order such that the moiety which is univalent is written first, the following general formulas result (with subunit A of the '891 patent first and elected species R² of the subject application second):

$R^1-O-[CH_2CH_2O]_a-(C_mH_{2m})-$ (subunit A of the '891 patent)

$Y^2-(C_2H_4O)_{b1}-O-Y^1-$ (elected species R^2 of the subject application)

As clearly illustrated above, the position of the oxygen atom and the C_2H_4O moiety in subunit A of the '891 patent and elected species R^2 of the subject application are reversed. As such, contrary to the Examiner's contention, the general formula of the '891 patent fails to teach the elected species R^2 of the subject application. The Applicants also note that the same is true for claimed copolymer (B), i.e., that the general formula of the '891 patent fails to teach claimed copolymer (B) for the same reasons as set forth above for claimed copolymer (A), but these arguments are not repeated for purposes of keeping this Appeal Brief succinct.

In the Advisory Action, the Examiner essentially argues that it is irrelevant that elected species R^2 was improperly interpreted in the context of the Examiner's position of obviousness. However, the Applicants respectfully disagree. Even if elected species R^2 and subunit A of the general formula of the '891 patent are position isomers, this difference is yet another distinguishing characteristic between the claimed block copolymers (A) and (B) of the subject application and the general formula disclosed in the '891 patent. In particular, this is one more modification, in addition to the five pages of picking and choosing required to arrive at claimed copolymer (A) of the subject invention set forth by the Examiner, necessary for one of ordinary skill in the art to arrive at the claimed invention in view of the '891 patent.

In *In re Petering*, 301 F.2d 676, 133 USPQ 275 (CCPA 1962), the prior art disclosed a generic chemical formula "wherein X, Y, Z, P, and R - represent either hydrogen or alkyl radicals, R a side chain containing an OH group." The Applicants in

that case claimed a species within the genus disclosed in the prior art, and the court held that because the generic formula encompassed a vast number and perhaps even an infinite number of compounds, the Applicants' species was not anticipated by the genus disclosed in the prior art.

This is particularly relevant to the instant situation in view of the fact the '891 patent discloses an even broader genus than the genus of *In re Petering*. More specifically, the '891 patent merely discloses a genus in which each R¹, independently of one another, is either hydrogen, alkyl, aralkyl, aryl, or an R²-C(O)- radical, and R² is a substituted or unsubstituted alkyl radical having from 1 to 8 carbon atoms, m is an integer between 3 and 8, and a, b, and c independently of one another are integers between 0 and 200 (and thus represent optional moieties), with the proviso that the sum (a+b+c) is from 2 to 300, R³ independently of one another are substituted and/or unsubstituted, saturated and/or unsaturated hydrocarbon radicals having from 1 to 20 carbon atoms, and d is an integer between 1 and 400. Thus, the genus of the '891 patent clearly encompasses even more possibilities than the generic chemical formula of the prior art in *In re Petering* due to the number of suitable substituents, the substantial ranges provided by values for the subscripts, as well as optional moieties of the general formula disclosed in the '891 patent. In particular, the prior art in *In re Petering* included five functional groups which could be selected from only three types of substituents; however, in the genus of the '891 patent, there are three optional moieties, varying subscripts which determine the length of the molecular chain and molecular weight of the copolymer, as well as numerous suitable substituents for each substituent of the general formula disclosed, especially in view of the language "selected from substituted and/or

unsubstituted, saturated and/or unsaturated hydrocarbon radicals" which encompasses an infinite number of substituents in itself, even when viewed separately from the other optional moieties and ranges of subscripts and varying substituents disclosed.

As the Examiner is also aware, a species is only anticipated "[i]f one of ordinary skill in the art is able to 'at once envisage' the specific compound within the generic chemical formula . . ." MPEP § 2131.02 (citing *Ex parte A*). Because of the infinite number of suitable substituents and optional moieties disclosed by the general formula of the '891 patent, it is clear that block copolymer (A) of the subject invention would not be "at once envisaged" by one of ordinary skill in the art. Further, several embodiments of block copolymer (A) of the subject invention are not disclosed by the general formula of the '891 patent, further evidencing the fact that one of skill in the art would not be able to at once envisage block copolymer (A) of the subject invention upon reviewing the general formula of the '891 patent. For example, the Examiner correlates the R² substituent of block copolymer (A) in claim 1 to the A moiety of the general formula of the '891 patent. However, the R² substituent of block copolymer (A) can be independently selected from hydrogen atoms, hydroxyl groups, univalent hydrocarbon groups, and alkoxy groups; none of these groups are disclosed or taught by the '891 patent at all, let alone in reference to the A moiety. Rather, the only suitable A moiety of the general formula of the '891 patent is: R¹-O-[CH₂CH₂O]_a[CH₂CH(CH₃)O]_b[CH₂CH(CH₂CH₃)O]_c-(C_mH_{2m})-.

Furthermore and perhaps more importantly, with respect to the obviousness of a species claimed within a genus disclosed in the prior art, "[w]hen a single prior art reference which discloses a genus encompassing the claimed species or subgenus but

does not expressly disclose the particular claimed species or subgenus, [the Examiner] should attempt to find additional prior art to show that the differences between the prior art primary reference and the claimed invention as a whole would have been obvious.” MPEP § 2144.08. The Examiner has not cited any additional references which show that differences between the ‘891 patent, i.e., the primary reference, and the invention claimed in the subject application are obvious. Moreover, the Examiner has not cited any additional references to support the Examiner’s conclusory statements with regard to the Examiner’s position of obviousness of claimed block copolymer (A), as described in greater detail below.

Further, “[the fact that a claimed species or subgenus is encompassed by a prior art genus is not sufficient by itself to establish a prima facie case of obviousness.” (emphasis added) *Id.* (citing *In re Baird*, 16 F.3d 380, 382, 29 USPQ2d 1550, 1552 (Fed. Cir. 1994)). Therefore, the general formula of the ‘891 patent, by itself, does not establish a prima facie case of obviousness with respect to the species of block copolymer (A) claimed in the subject application. The Examiner argues that there is a “reasonable expectation” that structurally similar species have similar properties, and thus a prima facie case of obviousness has been established. (see page 10 of the Final Office Action). However, this is a moot point. Clearly, a chemical species has at least a nominal structural similarity to the genus to which the chemical species belongs, otherwise a genus-species relationship would not even exist. Thus, if a showing of mere structural similarity is all that was required to establish a prima facie case of obviousness, this requirement would be expressly contradicted by the fact that a genus, by itself, is not sufficient to establish a prima facie case of obviousness, as set forth above. Moreover,

the Examiner has not established similar physical properties, especially in view of the fact that the ultimate use of the copolymer of the ‘891 patent is as an antifoam, whereas the claimed block copolymer (A) is used in compositions for hair.

A related consideration is whether the prior art highlights any “typical,” “preferred,” or “optimum” species within the genus. Highlighted species different from those claimed may weigh against a determination of obviousness. *In re Baird*, 16 F.3d at 382, 29 USPQ2d at 1552. On page 4 of the Final Office Action, the Examiner contends that the polyorganosiloxane is permitted to be repeated up to 400 times, and thus the claimed molecular weight of the polyorganosiloxane unit in the claimed block copolymer (A), as well as the relative mass percentage of the polyorganosiloxane unit in the claimed block copolymer (A), are obvious. However, as indicated immediately above, it is also important to evaluate the preferred species within the disclosed genus. To this end, column 3, lines 45-50 of the ‘891 patent states that the copolymer of the ‘891 patent preferably has from 6-30 diorganopolysiloxane units. This preferred range for the ‘891 patent drastically reduces the molecular weight of the copolymer, as well as the mass percent of the diorganopolysiloxane present in the copolymer. In contrast, in the subject application, it is claimed that the polyorganosiloxane block constitutes 50-99 mass percent of block copolymer (A); in view of the preferred ranges of the ‘891 patent, such a mass percent of polyorganosiloxane is unlikely, further weighing against a finding of obviousness.

The Examiner is respectfully reminded that to establish a prima facie case of obviousness, “[t]he section 103 requirement of unobviousness is no different in chemical cases than with respect to other categories of patentable inventions.” *In re Papesch*, 315

F.2d 381, 385, 137 USPQ 43, 47 (CCPA 1963). The Examiner has not set forth a prima facie case of obviousness. In particular, where the prior art has disclosed a genus, “Office personnel should make findings as to:

- (A) the structure of the disclosed prior art genus and that of any expressly described species or subgenus within the genus;
- (B) any physical or chemical properties and utilities disclosed for the genus, as well as any suggested limitations on the usefulness of the genus, and any problems alleged to be addressed by the genus;
- (C) the predictability of the technology; and
- (D) the number of species encompassed by the genus taking into consideration all of the variables possible.” (emphasis added) MPEP § 2144.08.

Criteria (A) and (D) are already described above and clearly weigh in favor of block copolymer (A), as claimed in the subject invention, being nonobvious over the genus disclosed in the ‘891 patent due to the fact the genus encompasses an infinite number of species and block copolymer (A) claimed in the subject invention is not expressly described or disclosed in the ‘891 patent.

With respect to criterion (B), the Examiner is respectfully reminded that “[i]t is the properties and utilities that provide real world motivation for a person of ordinary skill to make species structurally similar to those in the prior art.” *Dillon*, 919 F.2d at 697, 16 USPQ2d at 1905; *In re Stemniski*, 444 F.2d 581, 586, 170 USPQ 343, 348 (CCPA 1971). Thus, “lack of any known useful properties weighs against a finding of motivation to make or select a species or subgenus.” *In re Albrecht*, 514 F.2d 1389, 1392, 1395-96, 185 USPQ 585, 587, 590 (CCPA 1975); *Stemniski*, 444 F.2d at 586, 170 USPQ

at 348 (close structural similarity alone is not sufficient to create a *prima facie* case of obviousness when the reference compounds lack utility, and thus there is no motivation to make related compounds.). Notably, the only utility disclosed in the ‘891 patent for the general formula relates to antifoams, i.e., foam stabilizers. Conversely, the subject application claims a composition for hair. Therefore, there is a lack of utility of the general formula of the ‘891 patent with respect to the use of the composition for hair treatment, which further evidences the nonobviousness of block copolymer (A) and weighs in favor of the Applicant in view of criterion (B) above with respect to nonobviousness of block copolymer (A). In addition, the Examiner has not set forth any reason why one of skill in the art would predict that a foam stabilizer would have excellent properties as a composition for hair, which also weighs in favor of the Applicants in view of criterion (C) above. As such, there is no motivation to select the species of block copolymer (A) claimed in the subject application, and the Examiner has not set forth a *prima facie* case of obviousness.

In response to this argument, the Examiner contends that the fact the claimed invention relates to a composition for hair is not given patentable weight in view of the fact this recitation is in the preamble of claim 1 in the subject application. (see page 12 of the Final Office Action). However, the Examiner’s argument expressly conflicts with MPEP § 2144.08, which sets forth the proper test of obviousness of a particular species within a disclosed genus. Notably, the second criterion of the test is not to merely weigh claimed distinctions between the claimed invention and the prior art disclosure; rather, Examiner should make findings as to the utilities disclosed for the genus of the prior art. Thus, the Examiner’s contentions regarding the patentable weight of the claim recitation

“composition for hair” are irrelevant in the context of the test set forth in MPEP § 2144.08 with respect to the obviousness of a claimed species in view of a disclosed genus.

Moreover, in terms of criterion (C) above, the Examiner contends that the ‘891 patent provides working Examples which teach how to make the copolymer, and thus the art is “predictable.” (see page 12 of the Final Office Action). However, enablement is distinct from predictability. Just because the ‘891 patent merely teaches how to make the copolymer disclosed therein does not make the art predictable, especially when the ‘891 patent teaches how to make the antifoams, whereas the claimed invention is directed toward compositions for hair.

Notwithstanding the above, the Applicants also respectfully submit that the Examiner has not properly established a *prima facie* case of obviousness of independent claim 1 for additional reasons. Recent case law, in particular *Takeda Chemical Industries Ltd. v. Alphapharm Pty. Ltd.*, 492 F.3d 1350 (Fed. Cir. 2007) and *Eisai Co. v. Dr. Reddy's Laboratories Ltd.*, 487 USPQ2d 1452 (Fed. Cir. 2008), has provided useful insight into how a *prima facie* case of obviousness of chemical inventions can properly be established in the wake of the Supreme Court’s decision in *KSR International Co. v. Teleflex Inc.*

In *Takeda* and *Eisai*, the Federal Circuit applied the *KSR* decision in the context of chemical applications. These decisions set out a two-step process for establishing a *prima facie* case of obviousness that is consistent with the Supreme Court’s guidance in *KSR*. The two-step process includes a first step of identifying a prior art “lead compound”. In the second step, after the lead compound is identified, the obviousness

analysis turns on what might lead a person of ordinary skill in the art to modify the lead compound to create the claimed compound. *Takeda*, 492 F.3d at 1357. Further, to properly establish *prima facie* obviousness, reasons must be set forth, based on what was known at the time of the invention, to perform the chemical modifications necessary to achieve the claimed compound. *Takeda*, 492 F.3d at 1363.

The Federal Circuit, in *Eisai*, adopted the “lead compound” analysis, stating “[o]bviousness based on structural similarity thus can be proved by identification of some motivation that would have led one of ordinary skill in the art to select and then modify a known compound (i.e., a lead compound) in a particular way to achieve the claimed compound.” *Eisai*, 487 USPQ at 1455 (emphasis added). In *Eisai*, the lead compound was chosen because it was unexpectedly superior to other prior art compounds. See *Eisai*, 487 USPQ2d at 1456 (explaining that the lead compound was twenty times more effective than other prior art compounds in an activity assay). The superior activity of the chosen “lead compound” in *Eisai* was believed to be due to a particular substituent group that would have to be changed to arrive at the claimed compound. See *Eisai*, 487 USPQ2d at 1456. Because the record did not contain any reasons that a skilled artisan would have to modify the substituent, the claim at issue was held to be non-obvious. See *Eisai*, 487 USPQ2d at 1457.

Notwithstanding the two-step process advanced by *Takeda* and *Eisai*, the Applicants recognize that *KSR* clearly dismissed rigid application of any particular tests for obviousness analyses. As succinctly summarized in MPEP 2141(II.), the ultimate focus when making a determination of obviousness should be on what a person of ordinary skill in the pertinent art would have known at the time of the invention, and on

what such a person would have reasonably expected to have been able to do in view of that knowledge. However, the analyses applied by the Federal Circuit in *Takeda* and *Eisai* clearly illustrate the manner in which a proper obviousness analysis of a chemical invention is performed including the level of specificity that is required on the part of the Examiner to adequately reconstruct how one of skill in the art would have been taught to transition from a lead compound to the claimed compound. Thus, while the Applicants recognize that *Takeda* and *Eisai* do not establish rigid tests for formulating a *prima facie* case of obviousness, any alternatives to the two-part process advanced by *Takeda* and *Eisai* must involve a commensurate level of analysis to properly reconstruct how one of skill in the art would have arrived at a claimed chemical invention based upon the knowledge available at the time of the chemical invention at issue.

The analyses performed in *Takeda* and *Eisai* have applicability to the instant claims in view of the subject matter thereof and in view of the art relied upon by the Examiner. Proper application of the two-part process advanced by *Takeda* and *Eisai* illustrates the non-obviousness of the claimed invention in view of the prior art relied upon by the Examiner to establish the instant rejection. Assuming that the Examiner has chosen the general formula taught by the '891 patent as the lead compound for purposes of commencing the obviousness analysis of the instantly claimed copolymer (A), the analysis then logically turns to what might lead a person of ordinary skill in the art to modify the lead compound to create the claimed compound and what teachings exist to suggest to such person of skill in the art how to make such a modification, if desired.

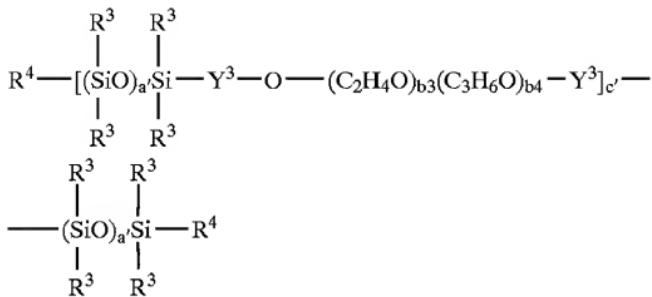
As set forth above, the Examiner has not asserted any reason whatsoever why one of skill in the art would pick and choose from the potentially infinite number of

copolymers encompassed by the general formula of the '891 patent, which is taught as an antifoam agent, to arrive at the presently claimed copolymer for a composition for hair, especially in view of the fact the general formula relied upon by the Examiner and taught by the '891 patent fails to teach the elected species R² as claimed in the subject application.

The Examiner continues to argue that the fact the claimed copolymer is for a composition for hair does not have any patentable weight. However, the Examiner fails to appreciate the distinction between a claimed feature of an invention and an end use of a particular product, and it is the latter which provides the motivations for optimization. Clearly, the fact that the '891 patent teaches antifoam agents and that the general formula may be optimized for that purpose in no way provides any reason for one of skill in the art to pick and choose from the potentially infinite number of copolymers encompassed by the general formula of the '891 patent to arrive at the presently claimed copolymer for a composition for hair. The ultimate utility of the presently claimed copolymer guides the reasons for which a particular compound is optimized, and without any suggestion whatsoever of the general formula of the '891 patent being suitable for compositions for hair, the Examiner has failed to provide any reason for optimizing the general formula disclosed in the '891 patent and has not set forth a proper *prima facie* case of obviousness.

The Examiner also contends that claimed block copolymer (B) of the subject application is taught by the same generic formula of the '891 patent as claimed block copolymer (A). Block copolymer (B), as claimed in the subject application, is similar to claimed block copolymer (A) with notable differences with respect to the subscripts for

each moiety in claimed block copolymer (B), which include upper limitations not present in claimed block copolymer (A). Notably, the substituents of claimed block copolymer (B) are independently selected from the same substituents of claimed block copolymer (A). Block copolymer (B) is represented by the following general formula:



wherein R^3 independently designates substituted or unsubstituted univalent hydrocarbon groups or groups of the following formula:

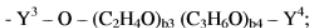


wherein Y^3 , $b3$, and $b4$ are defined below, Y^4 designates hydrogen atoms or a substituted or unsubstituted univalent hydrocarbon group; Y^3 designates a bivalent organic group; R^4 independently designates hydrogen atoms, hydroxyl groups, substituted or unsubstituted univalent hydrocarbon groups, alkoxy groups, or groups represented by the following formula:



" a' " is an integer within the range of 1 to 1350; " $b3$ " and " $b4$ " are, respectively, integers within the range of 0 to 220 (but $b3$ and $b4$ cannot be both 0); " c' " is an integer within

the range of 0 to 50; when c' is 0, at least one of the groups designated by R³ or R⁴ is represented by the formula:



Thus, the arguments set forth above relative to nonobviousness of block copolymer (A) are equally applicable to block copolymer (B) but are not repeated here for purposes of clarity. The Applicants submit that block copolymer (B) is nonobvious over the general formula disclosed by the '891 patent for the same reasons that block copolymer (A) is nonobvious in view of the same general formula.

Further, claim 1 specifies that each of block copolymer (A) and block copolymer (B) is present in the composition within the range of 0.01 to 10 mass % (per total weight of the composition as a reference). The Examiner contends that “[a] person of ordinary skill in the art would have had a reasonable expectation of success in combining the copolymers in a composition because [the '891 patent] teaches that multiple copolymers may be used in antifoam compositions.” (emphasis added). However, once again, “rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). The Examiner has failed to set forth any articulated reasoning with some rational underpinning as to why one of skill in the art would select copolymer (A) or (B) individually, let alone a combination of copolymers (A) and (B), as claimed in the subject application, to form a composition for hair in view of the genus disclosed for foam stabilizers in the '891 patent.

The Examiner rebuts the Applicants’ assertion that the Examiner has made a

conclusory statement by arguing “[a] person of ordinary skill in the art would have had a reasonable expectation of success in combining the copolymers in a composition because [the ‘891 patent] teaches that multiple copolymers may be used together in antifoam compositions.” (see the Final Office Action, page 13). This is simply a regurgitation of the Examiner’s previous conclusory statement and suffers from the same deficiency. Stating that one of ordinary skill in the art would have a reasonable expectation of success in combining copolymers is entirely conclusory and fails to set forth any real motivation for picking and choosing the subscripts, substituents, and optional moieties of the general formula disclosed in the ‘891 patent, which is an antifoam agent, to arrive at the claimed invention.

When making a determination of obviousness, the focus should be on what a person of ordinary skill in the pertinent art would have known at the time of the invention, and on what such a person would have reasonably expected to have been able to do in view of that knowledge. See MPEP 2141(II). The Applicants point out that the ‘891 patent does not teach or otherwise disclose a composition for hair comprising block copolymer (A) or block copolymer (B), let alone a combination of block copolymer (A) and block copolymer (B) and, more specifically, a combination of block copolymers (A) and (B) in the relative amounts claimed. Because the ‘891 patent is silent to utility relative to compositions comprising such copolymers for treating hair, there is no reason whatsoever that one of skill in the art, when forming a composition for hair, would turn to the ‘891 patent, and select specific substituents and/or optional moieties and particular subscripts from the general formula disclosed to form either claimed block copolymer (A) or claimed block copolymer (B), let alone the claimed combination of block

copolymer (A) and (B). Thus, the Examiner has not established a proper *prima facie* case of obviousness.

In view of the foregoing, the Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness of the instantly claimed invention, through application of the two-part process advanced by *Takeda* and *Eisai*, in view of the teachings the '891 patent, and further in view of the failure of the '891 patent to disclose, teach, or even suggest the elected species R² as claimed in the subject application.

In view of the foregoing, the Applicants respectfully submit that claim 1 is both novel and non-obvious over the prior art including over the '891 patent. As such, the Applicants submit that the claims are in condition for allowance and respectfully request such allowance. In addition, because the Examiner has improperly correlated elected species R² in the subject application to subunit A of the '891 patent, the Applicants also request rejoinder of withdrawn claims 4-14 because the Examiner's original reason for withdrawing these claims, i.e., an *a posteriori* lack of unity, is no longer applicable in view of the fact that claimed copolymer (A) is novel and nonobvious itself. While it is believed that no additional fees are presently due, the Commissioner is authorized to charge the Deposit Account No. 08-2789, in the name of Howard & Howard Attorneys PLLC for any fees or credit the account for any overpayment.

Respectfully submitted,

HOWARD & HOWARD ATTORNEYS PLLC

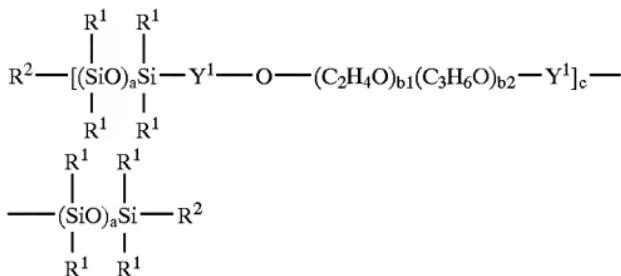
December 21, 2009
Date

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VIII. Claims Appendix

1. (Previously Presented) A composition for hair comprising:
a block copolymer (A) represented by the following general formula (1):

General formula (1)



wherein R^1 independently designates univalent hydrocarbon groups free of aliphatic unsaturation, hydroxyl groups, or alkoxy groups;

Y^1 designates a bivalent organic group;

R^2 independently designates hydrogen atoms, hydroxyl groups, substituted or unsubstituted univalent hydrocarbon groups, alkoxy groups, or groups represented by the following formula:



(wherein Y^2 is a hydrogen atom or a substituted or unsubstituted univalent hydrocarbon group);

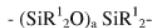
"a" is 1 or a greater integer;

"b1" is 1 or a greater integer;

"b2" is 0, 1 or a greater integer;

"c" is 1 or a greater integer;

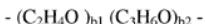
the average molecular weight of the polyorganosiloxane block represented by formula:



is equal to or exceeds 10,500;

the polyorganosiloxane block constitutes 50 to 99 mass % of block copolymer (A);

the average molecular weight of the polyoxyalkylene block represented by formula:



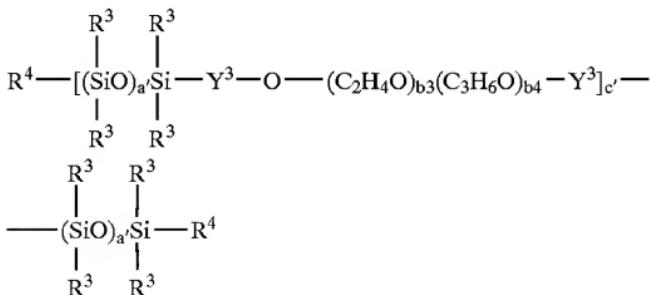
is within the range of 130 to 10,000; and

the average molecular weight of block copolymer (A) is equal to or higher than 50,000;

and

a block copolymer (B) represented by the following general formula (2):

General formula (2)



wherein R^3 independently designates substituted or unsubstituted univalent hydrocarbon

groups or groups of the following formula:



(wherein Y³, b3, and b4 are defined below, Y⁴ designates hydrogen atoms or a substituted or unsubstituted univalent hydrocarbon group);

Y³ designates a bivalent organic group;

R⁴ independently designates hydrogen atoms, hydroxyl groups, substituted or unsubstituted univalent hydrocarbon groups, alkoxy groups, or groups represented by the following formula:

- Y³ - O - (C₂H₄O)_{b3} (C₃H₆O)_{b4} - Y⁴;

"a" is an integer within the range of 1 to 1350;

"b3" and "b4" are, respectively, integers within the range of 0 to 220 (but b3 and b4 cannot be both 0);

"c" is an integer within the range of 0 to 50; when c is 0, at least one of the groups designated by R³ or R⁴ is represented by the formula:

- Y³ - O - (C₂H₄O)_{b3} (C₃H₆O)_{b4} - Y⁴;

the average molecular weight of the polyorganosiloxane block represented by formula:

- (SiR³)_a SiR³ -

is within the range of 134 to 10,000;

the polyorganosiloxane block constitutes 0.7 to 97.5 mass % of block copolymer (B);

the average molecular weight of the polyoxyalkylene block represented by formula:

- (C₂H₄O)_{b3} (C₃H₆O)_{b4} -

is within the range of 130 to 10,000; and

the average molecular weight of block copolymer (B) is within the range of 650 to 100,000;

wherein each of block copolymer (A) and block copolymer (B) is present in the

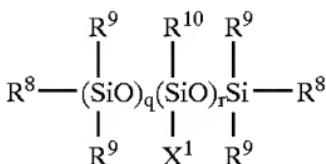
composition within the range of 0.01 to 10 mass % (per total weight of the composition as a reference).

2. (Cancelled)

3. (Cancelled)

4. (Withdrawn) The composition of Claim 1, further comprising a silicone compound (C) of at least one type expressed by general formula (3) that is contained in an amount of 0.01 to 10 mass % (per total weight of the composition as a reference).

General formula (3)



In the above formula, R^9 independently designates hydrogen atoms and substituted or unsubstituted univalent hydrocarbon groups; X^1 designates a reactive functional group represented by formula:

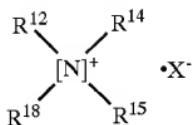


(where R^{11} is a direct bond or a bivalent hydrocarbon group with 1 to 20 carbon atoms, and Z^1 is a group that contains a reactive group); R^8 are independently hydrogen atoms, hydroxyl groups, substituted or unsubstituted univalent hydrocarbon groups, alkoxy groups, or groups represented by X^1 ; R^{10} represents either R^9 or X^1 ; "q" is an integer that may be at least 1; "r" is 0 or an integer that may be at least 1; and the average molecular weight of component (C) is within the range of 250 to 1,000,000.

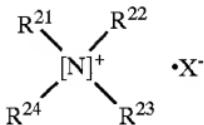
5. (Withdrawn) The composition of Claim 4, wherein in General formula (3) for silicone compound (C), Z¹ designates an amino-containing group or an ammonium-containing group; when r = 0, and at least one R⁸ is X¹.

6. (Withdrawn) The composition of Claim 1, further comprising a cationic surface-active agent (D) of at least one type comprising any of the compounds represented by general formulae (4), (5), and (6):

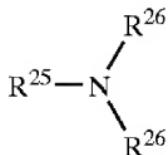
General formula (4)



General formula (5)



General formula (6)



where in general formula (4), R¹² designates an alkyl group with 10 to 24 carbon atoms, hydroxyalkyl groups, acyloxyalkyl groups bonded to alkyl groups with 10 to 24 carbon atoms, or amidoalkyl groups; R¹⁴ and R¹⁵ independently designates benzyl groups,

hydroxalkyl groups, or alkyl groups having 1 to 3 carbon atoms; R¹³ may be R¹², R¹⁴, or R¹⁵; and X designates a halogen atom or an alkyl sulfuric acid group;

where in general formula (5), at least one of R²¹, R²², R²³, and R²⁴ designates an aliphatic acryloxy (polyethoxy) ethyl group, alkenyl group, and a linear or branched alkyl group that contain 8 to 35 of total carbon atoms and can be OH-substituted or fissured by functional groups of the following formulae: - O -, - CONH -, - OCO -, or - COO -. The remaining groups may comprise hydroxalkyl or alkyl groups with 1 to 5 carbon atoms, or polyoxyethylene groups with the total addition number not exceeding 10. X⁻ designates a halogen ion or an organic anion; and

where in general formula (6), R²⁵ designates an alkenyl group and a linear or branched alkyl group that contain 8 to 35 of total carbon atoms and can be OH-substituted or cleaved by functional groups of the following formulae: - O -, - CONH -, - OCO -, or - COO -. R²⁶ independently designates a hydroxalkyl group, alkenyl group, or alkyl group with 1 to 22 carbon atoms.

7. (Withdrawn) The composition of Claim 1, further comprising a surface-active agent (E) of at least one type selected from an anionic surface-active agent, amphoteric surface-active agent, and nonionic surface-active agent, said agent being used in an amount of 0.01 to 40 mass % (per total weight of the composition as a reference).

8. (Withdrawn) The composition of Claim 1, further comprising a water-soluble polymer (F) added in an amount of 0.01 to 10 mass % (per total weight of the composition as a reference).

9. (Withdrawn) The composition of Claim 1, wherein said block copolymer (A) is dissolved in a liquid cyclic silicone (G).

10. (Withdrawn) The composition of Claim 1, wherein said block copolymer (A) is dissolved in a liquid chain silicone (H).

11. (Withdrawn) The composition of Claim 1, wherein said block copolymer (A) is dissolved in a liquid isoparaffin-type hydrocarbon (I).

12. (Withdrawn) The composition of Claim 1, wherein said block copolymer (A) is dissolved in a liquid or hard ester oil (J).

13. (Withdrawn) The composition of Claim 1, comprising an emulsion type composition obtained by emulsifying a solution formed by dissolving said block copolymer (A).

14. (Withdrawn) The composition of Claim 13, wherein the emulsion type composition is further compounded with 0.01 to 10 mass % (per total mass of the composition as a reference) of a water-soluble polyhydric alcohol (K).

IX. Evidence Appendix

None.

X. Related Proceedings Index

None.